

**CLAIMS**

What is claimed is:

1. A method in a data processing system of supporting multi-cycle simulation, said method comprising:

receiving a configuration database including at least one data structure representing an instance of a Dial entity, wherein said instance of said Dial entity has at least an input, an output, and at least one associated latch within a digital design, wherein a value of the output of the instance of the Dial entity controls a value stored within the at least one associated latch;

receiving a control file, wherein said control file indicates that at least one associated latch data structure is to be inserted within the configuration database to represent said at least one associated latch during multi-cycle simulation; and

in response to receipt of the configuration database and said control file, processing said configuration database with reference to said control file to insert within said configuration database at least one latch data structure and to associate, within said configuration database, the at least one latch data structure with the instance of the Dial entity.

2. The method of Claim 1, wherein receiving said control file comprises receiving a control file identifying said at least one associated latch utilizing a regular expression.

3. The method of Claim 1, wherein said at least one latch data structure comprises a second latch data structure, and wherein receiving said configuration database comprises receiving a configuration database containing a first latch data structure corresponding to said latch within the digital design.

4. The method of Claim 3, wherein:

receiving the configuration database comprises receiving a configuration database including a mapping data structure uniquely associating each of a plurality of different possible input value sets that may be received at the input of said instance of said Dial entity with a respective one of a plurality of different output value sets that will correspondingly appear at said output;

receiving said control file comprises receiving a control file containing polarity information indicating a relative polarity of the value contained within the second latch data structure with respect to said first latch data structure; and

processing said configuration database further comprises augmenting said mapping data structure, by reference to said polarity information, with mapping information indicating values to be loaded into said second latch data structure in response to various input values received at said input of said instance of said Dial.

5. The method of Claim 1, wherein:

receiving said control file comprises receiving a control file containing an addition rule for generating a name for said at least one latch data structure; and

processing said configuration database comprises generating a name for said at least one latch data structure in accordance with said addition rule.

6. The method of Claim 1, wherein said at least one associated latch is a slave latch of a master-slave latch pair, and wherein processing said configuration database with reference to said control file to insert within said configuration database at least one latch data structure comprises processing said configuration database to insert a latch data structure representing a master latch of the master-slave latch pair.

7. A data processing system, comprising:

means for receiving a configuration database including at least one data structure representing an instance of a Dial entity, wherein said instance of said Dial entity has at least an input, an output, and at least one associated latch within a digital design, wherein a value of the output of the instance of the Dial entity controls a value stored within the at least one associated latch;

means for receiving a control file, wherein said control file indicates that at least one associated latch data structure is to be inserted within the configuration database to represent said at least one associated latch during multi-cycle simulation; and

means, responsive to receipt of the configuration database and said control file, for processing said configuration database with reference to said control file to insert within said configuration database at least one latch data structure and to associate, within said configuration database, the at least one latch data structure with the instance of the Dial entity.

8. The data processing system of Claim 7, wherein said means for receiving said control file comprises means for receiving a control file identifying said at least one associated latch utilizing a regular expression.

9. The data processing system of Claim 7, wherein:  
said at least one latch data structure comprises a second latch data structure; and  
said means for receiving said configuration database comprises means for receiving a configuration database containing a first latch data structure corresponding to said latch within the digital design.

10. The data processing system of Claim 9, wherein:  
said means for receiving the configuration database comprises means for receiving a configuration database including a mapping data structure uniquely associating each of a plurality of different possible input value sets that may be received at the input of said instance

of said Dial entity with a respective one of a plurality of different output value sets that will correspondingly appear at said output;

said means for receiving said control file comprises means for receiving a control file containing polarity information indicating a relative polarity of the value contained within the second latch data structure with respect to said first latch data structure; and

said means for processing said configuration database further comprises means for augmenting said mapping data structure, by reference to said polarity information, with mapping information indicating values to be loaded into said second latch data structure in response to various input values received at said input of said instance of said Dial.

11. The data processing system of Claim 7, wherein:

said means for receiving said control file comprises means for receiving a control file containing an addition rule for generating a name for said at least one latch data structure; and

said means for processing said configuration database comprises means for generating a name for said at least one latch data structure in accordance with said addition rule.

12. The data processing system of Claim 7, wherein:

said at least one associated latch is a slave latch of a master-slave latch pair; and

said means for processing said configuration database with reference to said control file to insert within said configuration database at least one latch data structure comprises means for processing said configuration database to insert a latch data structure representing a master latch of the master-slave latch pair.

13. A program product comprising a computer usable medium, including:

means for receiving a configuration database including at least one data structure representing an instance of a Dial entity, wherein said instance of said Dial entity has at least an input, an output, and at least one associated latch within a digital design, wherein a value of the

output of the instance of the Dial entity controls a value stored within the at least one associated latch;

means for receiving a control file, wherein said control file indicates that at least one associated latch data structure is to be inserted within the configuration database to represent said at least one associated latch during multi-cycle simulation; and

means, responsive to receipt of the configuration database and said control file, for processing said configuration database with reference to said control file to insert within said configuration database at least one latch data structure and to associate, within said configuration database, the at least one latch data structure with the instance of the Dial entity.

14. The program product of Claim 13, wherein said means for receiving said control file comprises means for receiving a control file identifying said at least one associated latch utilizing a regular expression.

15. The program product of Claim 13, wherein:

said at least one latch data structure comprises a second latch data structure; and

said means for receiving said configuration database comprises means for receiving a configuration database containing a first latch data structure corresponding to said latch within the digital design.

16. The program product of Claim 15, wherein:

said means for receiving the configuration database comprises means for receiving a configuration database including a mapping data structure uniquely associating each of a plurality of different possible input value sets that may be received at the input of said instance of said Dial entity with a respective one of a plurality of different output value sets that will correspondingly appear at said output;

said means for receiving said control file comprises means for receiving a control file containing polarity information indicating a relative polarity of the value contained within the second latch data structure with respect to said first latch data structure; and

said means for processing said configuration database further comprises means for augmenting said mapping data structure, by reference to said polarity information, with mapping information indicating values to be loaded into said second latch data structure in response to various input values received at said input of said instance of said Dial.

17. The program product of Claim 13, wherein:

said means for receiving said control file comprises means for receiving a control file containing an addition rule for generating a name for said at least one latch data structure; and

said means for processing said configuration database comprises means for generating a name for said at least one latch data structure in accordance with said addition rule.

18. The program product of Claim 13, wherein:

said at least one associated latch is a slave latch of a master-slave latch pair; and

said means for processing said configuration database with reference to said control file to insert within said configuration database at least one latch data structure comprises means for processing said configuration database to insert a latch data structure representing a master latch of the master-slave latch pair.